



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>G02B 6/12</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/60388</b> <b>(43) International Publication Date:</b> 12 October 2000 (12.10.00)
<b>(21) International Application Number:</b> PCT/GB00/01249 <b>(22) International Filing Date:</b> 31 March 2000 (31.03.00)  <b>(30) Priority Data:</b> 9907655.6                      1 April 1999 (01.04.99)                      GB 9920748.2                      2 September 1999 (02.09.99)                      GB  <b>(71) Applicant (for all designated States except US):</b> THE SECRETARY OF STATE FOR DEFENCE [GB/GB]; Whitehall, London SW1 (GB).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> RUSSELL, Philip, St.John [GB/GB]; Shepherds Mead, Southstoke, Bath BA2 7EB (GB). BIRKS, Timothy, Adam [GB/GB]; 14 Horsecombe Brow, Combe Down, Bath BA2 5QY (GB). KNIGHT, Jonathan, Cave [GB/GB]; Canteen Cottage, Canteen Lane, Wellow, Bath BA2 8PY (GB). MANGAN, Brian, Joseph [GB/GB]; 2 Station Road, Lower Weston, Bath BA1 3DX (GB).  <b>(74) Agents:</b> BARDO, Julian, Eason et al.; Abel & Imray, 20 Red Lion Street, London WC1R 4PQ (GB).		<b>(81) Designated States:</b> AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> A PHOTONIC CRYSTAL FIBRE AND A METHOD FOR ITS PRODUCTION		
<div style="text-align: center;"> </div>		
<b>(57) Abstract</b> <p>This invention relates to an optical fibre that comprises a core (4) of lower refractive index that is surrounded by a cladding which includes regions of a higher refractive index and is substantially periodic, where the core (4) has a longest transverse dimension that is longer than a single, shortest period of the cladding. In a fibre of this type light is substantially confined to the core area by virtue of the photonic band gap of the cladding material. The invention also relates to a method of manufacturing such an optical fibre, comprising the steps of forming a stack of canes (5), the stack (5) including at least one truncated cane (6) that defines an aperture (7), and then drawing the stack (5) into a fibre having an elongate cavity. The fibre is suitable for high power uses, but is equally suitable for other areas, e.g. optical amplifiers, spectral filters, lasers, gas sensors and telecommunications networks.</p>		